

Medium Temperature Breaker KDF002

1. Introduction

FCC (Filter Cake Clean-up) is engineeringly designed to clean-up the filter cake created by the DIFs (Drill-In-Fluids) used to drill the regular, horizontal or deviated open-hole wells. KDF002 is a low to medium temperature biological enzyme breaker, used to hydrolyze starch or starch derivatives in water-based Drill-In-Fluids (DIFs). KDF002 combined with chelating agent KDF012 in FCC fluids not only removes the filter cake homogeneously (avoid pinholes from strong mineral acid treatment) and effectively but also simplifies the field operations (one-stage instead of multiple-stage treatment) and minimizes the environmental and corrosion footprint for horizontal or deviated open-hole filter cake clean-up process.

2. Physical Properties and Hazards

Additives	Form	S.G.	Water Solubility	Melting/Flash Point (°C)	Health Hazard	Physical Hazard	pH
KDF002	Light Yellow Liquid	1.00-1.10	Soluble	-	Eyes	-	6-8 (1%)

3. Chemical Properties and Application

The breaking mechanism of enzymes is specific to the polymers to be broken.

When formulating in gravel packing fluids such as polymeric or surfactant-based gels, the enzyme may reduce the viscosity of the packing fluids, particularly in KCl brines. Laboratory tests are required to confirm the KDF002 effects on packing fluids and reformulate the FCC systems properly.

The optimum performance of KDF002 is obtained at pH range 5.0-5.5 and temperature of 150°F. Exposure to temperatures and pH above or below these values results in less effective enzyme activity. Enzyme stabilizers are normally recommended when bottomhole temperature exceeds 200°F (applicable up to 275°F if stabilizer is used). The synergistic effect between enzyme and stabilizer will stabilize the enzyme and keep them active for longer time and higher temperature.

4. Treatment

A typical range is 5 to 50 Gal/1,000 Gal (5 to 50 L/m³) of the FCC fluids. Concentration depends on the polymer types and concentrations to be broken, pH, soak temperature and time, and components in DIF filter cakes and FCC fluids.

5. Packaging

KDF002 is supplied in 5 gallons or 55 gallons HDPE drum.

Keep it away from extreme conditions such as places near flames or direct sunlight. Store at temperatures lower than 20°C.